Claims

1. Transmission, in particular an automatic transmission for a vehicle, with at least one shift control element (1) formed at least of one second shift control element half 3 that can be brought into active frictional engagement with a first shift control element half 2, and whose shift control element halves (2, 3) can be connected respectively with non-rotating transmission components (4) and/or rotating transmission components (5), such that at least between the first shift control element half (2) and the transmission components (5) that can be connected thereto a positive-locking coupling device (6) is provided, characterized in that the coupling device (6) is additionally constructed with a frictional element (7) to synchronize the coupling device (6).

2. Transmission according to claim 1, characterized in that the frictional element (7) of the coupling device (6) comprises a friction surface element (18) which can be displaced axially and is connected to the transmission components (5).

3. Transmission according to claim 2, characterized in that the friction surface element (18) is spring loaded against the transmission components (5) such that before the closure of a positive-locking function (8) of the coupling device (6), it comes into active engagement with the associated shift control element half (2) in order to synchronize the coupling device (6).

4. Transmission according to claim 3, characterized in that the form-locking function (8) of the coupling device (6) is made as a claw coupling.

5. Transmission according to any of claims 1 to 4, characterized in that an actuator (28) is provided for actuating the shift control element (1) and for controlling the coupling device (6).

6. Transmission according to claim 5, characterized in that the actuator (28) acts on the coupling device (6) via a first spring device (17).

7. Transmission according to Claims 5 or 6, characterized in that the construction of the actuator is such that, when it becomes necessary to close the shift control element (1), before establishing frictional engagement between the

halves (2, 3) of the shift control element (1) the coupling device (6) can be actuated in the axial direction of the shift control element (1) in such manner that the coupling device (6) is synchronized by the frictional element and the positive-locking function (8) of the coupling device (6) is only then established.

8. Transmission according to any of claims 5 to 7, characterized in that the actuator (28) comprises a hydraulic piston unit (14) which, when acted on by pressure, actuates the shift control element (1) and the coupling device (6) in the closing direction in each case.

9. Transmission according to claim 8, characterized in that the actuator (28) comprises a second spring device (20) which, when it becomes necessary to open the shift control element (1), actuates the piston unit (14) in the opening direction of the shift control element (1) and the coupling device (6).

10. Transmission according to claims 8 or 9, characterized in that the actuator (28) is constructed such that when the piston unit (14) is actuated in the opening direction of the shift control element (1) and the coupling device (6), the shift control element (1) opens first and then the coupling device (6).

11. Transmission according to any of claims 1 to 10, characterized in that the shift control element (1) comprises a positive-locking element (9 or 9A) for the positive-locking engagement of the shift control element halves (2, 3).

12. Method for the control of a transmission having at least one shift control element (1) comprising at least two shift control element halves (2, 3) which can be brought into active frictional engagement, each being able to be connected to non-rotating transmission components (4) and/or rotating transmission components (5), such that at least between one of the shift control element halves (2) and the transmission components (5) that can be connected thereto a coupling device (6) is provided, and when it becomes necessary to close the shift control element (1):

a) the open coupling device (1) is synchronized,

b) a positive-locking function (8) of the coupling device (6) is closed, and

c) the halves (2, 3) of the shift control element (1) are brought into frictional engagement.

13. Method according to claim 12, characterized in that to synchronize the coupling device (6) a frictional element (7) of the coupling device (6) is closed.

14. Method according to claims 12 or 13, characterized in that after the frictional engagement of the shift control element halves (2, 3), a positive-locking element (9 or 9A) of the shift control element (1) is closed.

15. Method according to claim 14, characterized in that after the form-locking element (9 or 9A) is closed, the transmission ability between the halves (2, 3) of the shift control element (1) is reduced by releasing the frictional engagement.

16. Method according to claim 15, characterized in that when it becomes necessary to open the shift control element (1), the frictional engagement between the shift control element halves (2, 3) is established.

17. Method according to claim 16, characterized in that when the frictional engagement between the shift control element halves (2, 3) has been established, the positive-locking element (9 or 9A) of the shift control element (1) is opened.

18. Method according to claim 17, characterized in that after the opening of the positive-locking element (9 or 9A) of the shift control element (1), the frictional engagement between the shift control element halves (2, 3) is removed.

19. Method according to claim 18, characterized in that when the frictional engagement between the shift control element halves (2, 3) has been released, the positive-locking function (8) of the coupling device (6) is opened.

20. Method according to claim 19, characterized in that when the positive-locking function (8) of the coupling device (6) has been opened, the frictional element (7) of the coupling device (6) is opened.